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NITROUS OXIDE IN CANINE PRACTICE.

This week we print an article which may ultimately introduce a new method of inducing anæsthesia in every-day canine practice; and the joint authors—a dentist and a veterinary surgeon—form an ideal combination of workers upon this particular question. Hitherto nitrous oxide gas has been practically, if not absolutely, unused in veterinary surgery; and these experiments therefore mark a new departure. Eventually, it is very possible that it may come to fill a distinct place of its own in minor surgery upon the dog, at least.

Observations upon three subjects, even though repeated, do not justify final conclusions. So far as they go, however, the experiments undoubtedly all point in one direction. They indicate that dogs may be quickly, easily, and safely anæsthetised by nitrous oxide gas; that the period of anæsthesia in them lasts about as long as that in human beings; and that recovery is much more rapid than is the case when chloroform is used—the latter being a great advantage in practice. It is certain that the drug deserves an extensive clinical trial. Of course its use in veterinary surgery, as in human practice, will always be subject to considerable limitations; and experience, with perhaps further modifications of apparatus, are required to precisely determine these.

On the whole, the record of our profession in this country with regard to anæsthetics is not by any means a full one. We have certainly no cause for self-reproach as regards cocaine and the various more recently introduced substitutes for it. But it will always be a blot upon our history that, though a few of us have used chloroform practically ever since it was first introduced, its popularisation amongst us has only taken place within the last twenty years. Probably even at the present day, some of us might advantageously study the whole subject of anæsthesia by inhalation more closely; and those who do will find it worth while to examine the ideas and technical methods of medical men and dentists. The most recent human text books may be consulted, and the most modern human apparatus studied—not for blind imitation, but for careful and intelligent adaptation to our own purposes. The whole subject has undergone a great deal of development within the last few years in the medical profession; and we should be unwise to ignore its results.

BILATERAL PURULENT NEPHRITIS: A SEQUEL OF "REDWATER."

The subject of this short contribution was a six-year-old shorthorn cow, in her third pregnancy. This animal, for a period of twelve months, had shown from time to time violent internal pain, as if from colic. In October last she had an attack of "redwater."

The breaking down of blood constituents was apparently much relieved by the exhibition of dilute acids, and the constipation was effectively overcome by mild purgative drenches, followed by Ol. lini., stimulant and tonic powders, composed of Pulv. rad. cinchona, Nux vomica, Ammon. carb., and Zingiber.

After an improvement lasting for four or five days the patient began to show signs of a relapse; the urine again became of a weak port wine colour; the pulse was very rapid, total anorexia was present, dullness, and lassitude were shown, as a result no doubt of septicæmia, and life was only maintained by frequent dosing with gruel and the medicines mentioned above. At intervals of a few minutes, the cow would moan piteously and grind her teeth; she also used to stand with her hind legs crossed, and her back bent downwards, and very taut, and manipulation in the region of the kidneys was painful. About this time the passage, per urethra, of purulent material began, and I was convinced that the case was hopeless. The fæces and urine were very mal-odourous. The patient died in a deep coma about three days after the last mentioned symptoms made their appearance.

On post-mortem examination every organ but the kidneys and uterus was healthy. The uterus showed very recent tuberculosis on its peritoneal surface. The kidneys gave evidence of chronic nephritis, being fibrous, with a firmly adherent capsule. On transverse section it was seen that the cortex of the kidneys was mostly broken down into a deep red, foul smelling, grumous material.

I record this case principally to invite descriptions of similar ones from your readers, and to learn if there are any symptoms other than the passage of discoloured mal-odourous urine, which can be considered *typical* of nephritis, whether simple or purulent.

It is worthy of note that the temperature remained normal until the beginning of apparent dissolution when, of course, there was a marked and rapid decline.

L. L. STEELE.

Beckermet.

ADMINISTRATION OF NITROUS OXIDE GAS TO DOGS.

By H. Harling Capes, L.D.S., Edin., Dudley; and R. Lewis Green, Capt. A.V.C.(T.,) Dudley.

Date: 22nd July, 1909, 7.30 p.m., cold night.

Case 1: *Subject.*—Wire-haired terrier bitch. Gas administered for two and a half minutes, and she was not under. The face piece was then removed and grease put round the edge of it, when she became completely cyanosed and well under the influence of N_{20}. in one and quarter minutes. Estimated she took six gallons of gas. Recovered when face piece was removed and allowed plenty of air.

Case 2; *Subject.*—Black and tan terrier bitch (mongrel). Became completely cyanosed in two minutes, five seconds. She had rigors twice, which did not occur in Case 1, but was noticed in Case 3. Respirations ceased and she lay collapsed for some time. Estimated took six gallons. Recovered when face piece was removed and allowed plenty of air.

Case 3: *Subject.*—Fox terrier bitch in whelp (condition poor). She took two gallons in fifty seconds, when outlet valve became defective. The face piece was removed and the valve readjusted, then we gave her about another four gallons, making six gallons in all "without air" when she became completely cyanosed. She was totally collapsed and had rigors twice, her heart was beating, but respirations practically ceased for almost thirty seconds.

We forced the last four gallons to see if it would kill her. The face piece was then removed, she breathed once of her own accord and then artificial respiration was resorted to, when she took five minutes to recover and was then able to stand. Violent twitchings of the head and ears took place on the ears being "flicked" or pinched.

These animals were fed at 10 a.m., and they took the gas quietly with almost imperceptible struggling. Two of the animals took no notice of a pin being stuck into the ribs or tail; showing that they were sufficiently under the anæsthetic to enable any small operation to be performed. Pupil dilated, conjunctival reflex gone.

"Repetition" on same three dogs in same order, 27th July, 1909.

Case I.—Four gallons was given first administration, she was one minute going under and cyanosed. Administered again immediately, five gallons in 45 seconds, and was completely under, cyanosed and rigors. Air was administered each time.

Case II.—"Given with air." First administration four gallons, was completely cyanosed in one minute forty seconds. Rigors. Was under the influence of N_{20} about thirty seconds (the same as is usual in the case of a human being).

Second administration "without air." Nine gallons, and she was completely cyanosed in one minute thirty-five seconds. Breathing ceased, and she was dead in one minute thirty-six seconds.

Case III.—Gave four gallons in 1¼ minutes, very little cyanosis, eyes insensitive. A very small amount of air was given and she was under about thirty seconds.

Second administration. Gave four gallons and she was completely under in one minute but only slightly cyanosed. She had slight rigors during recovery.

This bitch was pregnant and the whelps were alive.

Muzzle.—The muzzle was specially made, and can best be described as a very "elongated face piece" the same as used by dentists, with a vertical expiratory valve. The gas was admitted through a two-way stop valve exactly similar to the one used by dentists. The one way admits N_{20} only, the other admits air only and shuts off the N_{20}. The skilful administration of a little air with the N_{20}. prolongs the period of anæsthesia. It is very evident after these experiments, that, in the hands of a competent anæsthetist, it is quite easy and perfectly safe to administer N_{20}. to dogs, and they remain under the influence of the gas a sufficient length of time to enable one to extract one or two teeth, or perform any minor operation which only takes a short period.

We were both very surprised at the amount of gas these animals took, and on the second date, viz., 27th, we were endeavouring to kill them, but found it more difficult than we anticipated.

Another very great factor in favour of N_{20}. is the short space of time they take to recover. This is totally different to $CHCl_3$.

Signs of Anæsthesia.—The general signs of anæsthesia in dogs are very much the same as in the human being, viz., a good pulse, full, firm, and slightly quickened. Relaxed muscles usually, but sometimes rigidity occurs. No stertor or jactitation was noticed in the dogs.

Cyanosis.—Cyanosis in dogs is specially noticed on the lips and tongue, and in our opinion this cyanosis coupled with muscular relaxation is the surest guide as to when to remove the face piece. Absence of "conjunctival reflex," in our opinion, is of no value as a guide in the case of dogs.

We believe that with practice, and an improved apparatus, it would be quite possible to give "prolonged gas to dogs."

Animals placed in "irrespirable gases" become convulsed before death, but when made to respire N_{20}. their respiration simply grows more and more shallow, finally ceases, and the animals die painlessly.

Touchstone's skeleton is carefully kept in a state of immaculate preservation at the Eaton Stud, near Chester. Touchstone's skeleton is doubly interesting from the fact that the horse is seen to have possessed nineteen pairs of ribs, which is one more than Nature ordinarily allows the equine race. Arranged below Touchstone's remains are the shank bones of the famous mare Beeswing, and her union with Touchstone resulted in Newminster. Buried close by these bones are three peerless mares—Shotover, Angelica and Lily Agnes.

ABDOMINAL WOUND WITH PROTRUSION OF INTESTINE IN THE CAT.

A female cat, aged about two years, was sent to the Infirmary for treatment on August 3rd, with the history that she had fallen on to a greenhouse roof and sustained a serious wound.

The animal arrived in a small basket, having been sent a journey of two miles. On examination a large amount of intestine was found protruding from a wound in the abdominal region, in front of the umbilical region and a little to the left of the median line. The wound easily admitted three fingers, and was of a jagged character. Another wound was found on the flank, which, however, did not extend through the abdominal muscles. The intestine and omentum were soiled by earth and by portions of wood fibre bedding, and were commencing to get dry. After administering chloroform I removed all the torn and soiled omentum, cleansed the intestine with a weak solution of Liq. cresolis, then washed with solution of Peroxide of hydrogen, replaced the intestine, cleansed wound as far as possible, sutured first the muscular wound and then the skin with Japanese silk, applied a large compress of double cyanide gauze soaked in Peroxide of hydrogen, then a layer of cotton wool and bandage. The diet was restricted to milk, which the animal took of her own accord.

On August 6th, as there was no action of the bowels, ¼ grain of calomel was given; and on the 7th two doses each 1-10 grain were administered at an interval of three hours, also an enema. The bowels acted at 4 p.m. On the night of the 7th the animal tore off the dressings and licked the wound, but fortunately did not injure the part or disturb the sutures. The second wound, however, suppurated and was slow in healing.

On the 8th small amounts of bread well soaked was allowed in the milk. The important wound healed well, but in consequence of the animal's tendency to lick the second wound the dressings were not left off until August 29th. She was sent home on August 31st, much to the surprise of the owner.

Remarks.—I report the above case, not with a view to demonstrating any surgical skill on my part, but to point out the remarkable powers of *vis medicatrix naturæ*. Indeed my technique would, by all the "high priests" of aseptic dogma, be regarded as heterodox to a marked degree. For I did not use a razor to remove the fur, neither did I boil the sutures nor the instruments.

But my excuse is that there was no time to spare for attending to the toilet of the peritoneum; the intestines were a long time exposed, and the animal was suffering from a certain amount of shock.

Why the serious wound should have done so well and the other so badly, is explained by the fact that the skin in connection with the latter was much bruised.

No doubt had I conformed to the rules of aseptic surgery, I should have attributed the result of the case to the employment of these measures. But there was a possibility that while carrying out the necessary technique the patient might have succumbed from shock.

E. Wallis Hoare, F.R.C.V.S.

Cork.

TUBERCULOSIS—BY INGESTION (?)

The subject of this case was a light bay gelding, aged eleven years. Nine months ago the owner noticed a small swelling, situate about the middle of the neck on the near side. No other swellings were visible, and except for an attack of influenza about five years ago, the animal was working every day and in good mettle.

My client was recommended by a friend to rub the swelling with some sort of "blistering liquid." About a week later they noticed a swelling in the pectoral region; this swelling disappeared in a few days.

On October 7th I was called in to see the swelling on the neck, and upon probing I found it was a deep-seated tumour, extending to the cervical bones. The pulse and temperature were normal, the animal was in good condition, and was eating and drinking well. The symptoms remained the same up to his death.

I injected the swelling with Fibrolysin on Friday, October 27th, and left word I would call to give another injection on Monday afternoon.

On the Monday mid-day the groom called at my house to say the horse was unable to move, and looked like falling down. When I got to the stable and tried to move the horse he was seized with violent tremors, became very stiff, and nearly fell down. Afterwards I noticed that these symptoms were produced when I raised the animal's head.

I gave a large dose of morphine and atropine, and advised my client to call in second opinion, or to have him destroyed. My client decided to wait till morning, when he rang me up to say the horse was down and could not move, and would I chloroform him to death.

Post-mortem.—I found the tumour to be tuberculous, also there were tuberculous masses in the parotid and pectoral regions. The lungs, pleura, liver, and spleen were not at all affected. There was also a tumour about the size of a pigeon's egg on the spinal cord in the space between the 1st and 2nd cervical bones, which was the cause of the spasms when I had raised the head. The bones were also affected, and the body of the dentata was cracked, but healed up.

I report the case to show how necessary it is to make microscopical examination of tumours, for the temperature and condition of this animal certainly did not point to tuberculosis.

Percival Carter,

Collenards, West Derby.

TWO CASES FOR DIAGNOSIS.

The following case with post-mortem examination may be of interest to veterinary surgeons who have dog practice.

Subject.—Rough-haired fox-terrier, four years old, always very healthy.

History.—Refused food on morning of Nov. 3rd. I saw dog during afternoon, found him drowsy, showing pain over stomach and vomiting even cold water. All the mucous membranes yellow.

Diagnosis.—Acute jaundice, probably due to inflammation of the intestine around the bile duct.

Treatment.—Calomel, xv. grains, and Mist. pepsin co. 3i. doses every three hours. Death occurred on Nov. 5th after gradual weakening.

Post-mortem.—The intestine blackened and necrotic in patches size of a shilling. Gall bladder was found to contain only one large clot of blood. The blood clot was ante-mortem.

While recording cases the following is interesting.

Subject..—Heifer. I was called in on Oct. 22nd to find the beast grunting and showing labour pains. Examination showed abnormal fœtal presentation. I proceeded to calve cow, then decided there was some disease in the stomach.

Treatment was first Ammon. carb. and Nux vomica, then Chlorodyne, Tr. zingib. As neither seemed to relieve the pain I told the owner it was about hopeless, and he was to go on giving the cow gruel and let her take her chance. The heifer had had already been purged by an old "cow doctor."

The beast died on Nov. 9th. I saw her on Nov. 6th last, and thought then the heart had become affected.

Post-mortem showed the stomachs healthy; intestine more or less inflamed; dry peritonitis; chest contained some gallons of milky-looking fluid, one lung showing tubercle that was about the same colour as fluid and very small.

Question—was the heart affected from the first sign of disease, or was the bowel the beginning of the trouble?

FRANK B. GREER.

Appleby.

AN UNUSUAL BOVINE GASTRIC DERANGEMENT.

We were requested at 11,30 p.m. to see a milch cow the property of M.O.H. The animal in question was in good condition and a heavy milker. It was ascertained on the morning of the same day she, along with two more cows, had broken into an orchard and had devoured a considerable quantity of "fallen" apples.

Symptoms. The animal moved with difficulty—suggestive of laminitis—back arched, abdomen slightly distended, muzzle dry and hot, breathing hurried; no rumen movements, the contents of which gave a doughy feel; bowels constipated. Temp. 104·3 F.; Pulse 65 per minute; appetite in abeyance, and the milk secretion stopped.

Sixty-eight hours after this cow was seen in the orchard she was sick, and discharged between 130 to 160 apples. These apples were nearly all whole, some were halved, and there were a few still more divided, and in addition a small quantity of ingested grass was present.

The whole apples when cut into gave the appearance of being partly cooked; otherwise they looked perfectly normal.

Remarks. I think several interesting deductions can be drawn from this case;

1. It speaks well for the cow's œsophageal capacity that she could devour greedily such a number of apples without choking.

2. One would have thought apples lying in the rumen 68 hours would have undergone more serious destructive changes than these did. Placed in a vessel under the same temperature and degree of moisture for the same length of time, fermentive and fungoid changes would have undoubtedly shown themselves. This rather suggests that the mucosa of the rumen and its secretions possesses anti-zymotic virtues which we practitioners are inclined to overlook, and further that they are not altogether obliterated when paralysis sets in, as was undoubtedly the case in this animal. Perhaps this anti-zymotic virtue also explains the absence of cerebral phenomena.

3. The treatment adopted was gastric and nervine stimulation. It took apparently nearly three days to rouse the rumen into activity, for one must conclude it was when this stage was reached that emesis set in.

The unique sidelights—to me at least—that this case presents, must be my only excuse for trespassing on your valuable space. The case made an uneventful recovery.

W. SCOTT.

Bridgwater.

ABSTRACTS FROM FOREIGN JOURNALS.

ASCARIS POISONING.

Dr. R. Goldschmidt, of Munich, discusses (*Münch. Medizin. Wochenschrift*) this well-known condition. Living ascarides, and still more ascarides which have been opened, give forth a peculiar, acrid, and very repugnant odour, which is somewhat weakened by preservation of the specimens in spirit, but nevertheless is still maintained. The exhalations, especially those from the fluid contents of the body cavity of the ascaris, are highly toxic to mankind. The mucous membranes are especially affected; and conjunctivitis with violent swelling and lachrymation, catarrh of the nose and throat, sneezing, coughing, loss of voice, and asthma set in. Spasmodic coughing, and asthmatic seizures regularly occurring at certain hours, are also observed; while further symptoms are nausea, vomiting, and painful swelling at the tips of the fingers.

Most men who occupy themselves with the preparation of ascarides—zoologists and so forth—

suffer more or less from ascaris poisoning. In most cases the individual susceptibility to the condition increases with continued exposure to the irritation, till even the slightest stimulation produces the symptoms. In isolated cases, however, a personal immunity seems to be present. *Ascaris megalocephala* of the horse is more toxic to human beings than *Ascaris lumbricoides* of the man and pig.

Nothing is yet certainly known of the nature of the toxic substance. Weinland has indicated free valerianic acid as an end-product of the metabolism of ascarides, and attributes the odour to this. This, however, does not explain the toxictiy of the body fluids of the parasites. In conclusion, Goldschmidt points out, as being worthy of note, the striking correspondence of the symptoms of ascaris poisoning with those of hay fever.—(*Ber. Tier. Woch.*)

Tracheal Percussion in Equine Practice.

Wirth describes (*Osterreich. Monatssch. f. Tierheilh.*) the subject of tracheal percussion, which is a physical method of chinical examination introduced at the Vienna School a few years ago by Schindelka. It consists of percussing a pleximeter placed upon the trachea and auscultating the tracheal sound thus produced at the *pulmonary* surface. Two persons are necessary for this, one to percuss, and one to auscultate, the latter being the veterinary surgeon.

The normal lung, being a bad conductor of sound, permits the dispersion of the sound of tracheal percussion, which gives the impression of coming from a distance.

When the lung is hepatised, however, the auscultator hears the percussion sound very distinct, sharp, short, and directly under the ear.

When fluid is present in the thorax, the result is that the conductibility of sound is increased in comparison with the normal lung, but is weakened when compared with the thick hepatised lung. Auscultation yields a distinct short sound which, however, is not localised under the ear as in hepatisation, but seems to come from a distance.

Wirth considers therefore that the special use of this method is to assist in the differential diagnosis of cases showing thoracic dullness.

Another article upon this subject appears in the same journal from the pen of J. Babor. This author has used the method upon many horses, including completely healthy ones as well as others suffering from pneumonia, pleurisy and pleuro-pneumonia.

He advises, as regards the technique, that the pleximeter should be applied completely, flatly, and firmly against the trachea. The region of the upper third of the neck is the most preferable one. The percussing strokes should not be too violent, and the pauses between them should be as nearly equal as possible. The auscultation is carried out in the usual manner, and should be extended to the normal portions of the lung in addition to the diseased ones.

Babor regards this method as yielding useful assistance in the differentiation between pneumonia and pleuro-pneumonia. It may also, in some cases, when pulmonary "caverns" and bronchiectases sufficiently superficially situated, exist, and are already suspected on the ground of other symptoms, assist in their determination. In addition to its utility it is a simple and quickly executed procedure, its sole disadvantage being that two persons are required to carry it out.—(*Berliner Tierärztl. Wochens.*)

The Chemistry of Traumatisms.

Cadéac and Maignon, in previous researches, have already demonstrated the appearance of small quantities of sugar in the urine of animals submitted to various traumatisms, such as ligation of a limb *en masse*, crushing of the muscles with pincers, and fractures. Similar observations have been made in human beings affected with fractures and violent contusions. The sugar which is eliminated in the urine has its origin in the traumatised tissues.

Maignon has since carried out experiments *in vitro* upon organs which have been isolated and placed beyond the reach of microbes, in conditions permitting their survival. He has thus shown that all the tissues of the organism are capable of elaborating sugar like the liver, but in smaller quantities. Two causes favour this production of glucose, viz., asphyxia and crushing, and of these the second is more important than the first. Muscles taken from an animal recently killed, and crushed at some points between pincers, or subjected to strong compression, produce much more sugar than the same organs preserved intact.

In order to determine the mechanism of this favouring influence, Maignon has more recently carried out experiments upon the muscles of the dog. He has studied the effects of crushing pushed to its last extremes until trituration is obtained, and has noted the variations undergone at the same time by glycogen and glucose, He has always found a more rapid destruction of glycogen and a more marked production of glucose in triturated muscles than in muscles simply chopped.

He has also repeated the same experiments upon muscles which, immediately after death, had been washed with an artificial circulation of normal saline solution. This measure was taken to determine whether the traces of blood which remain in the muscles after bleeding play any part in the production of sugar. The results showed that the washed muscles, free from all traces of blood, nevertheless destroys its glycogen. But while, in the unwashed muscle, this destruction is always much more marked in the triturated portions than in those simply chopped, this is not the case in the washed muscle. In the latter the destruction of glycogen is not sensibly augmented by the crushing, and is sometimes even diminished. The glucose, however, is always much more abundant in the triturated than in the chopped muscles at the end of the experiment.

In chopped muscles, the destruction of glycogen is therefore the same in washed and unwashed tissues; but the results are quite different in triturated muscles, in which the destruction of

glycogen is augmented in unwashed tissues only. This proves that the action of crushing in encouraging the destruction of glycogen, which is seen in unwashed muscles, is due to the presence of traces of blood which the trituration has brought into contact with the glycogen.

These results permit of the more precise interpretation of the experiments upon living animals in which glycosuria has been observed to follow the ligation, crushing, or fracture of the limbs. The infiltration of the tissues by the blood plasma causes local glycogenic disturbances in the injured tissues; the amylolytic ferment of the blood, brought into contact with the glycogen, accelerates its transformation into sugar. In the case of a fractured bone, it is not necessary that the muscles should have been crushed in order to produce glycosuria; the fracture of the bone is sufficient, for it is always followed by hæmorrhage.

These considerations have some general pathological interest, for they explain such facts as the frequece of complications in contused wounds in which the tissues have been more or less bruised, the appearance of abscesses following simple contusions, and the development of white tumours in tuberculous patients after traumatisms. They also bear upon the occasional sudden evolution of a latent infectious disease in consequence of traumatism, and upon the fact that, in animals resistent to the inoculation of infectious diseases, the disappearance of natural immunity has been noticed to follow upon traumatism. Nocard, for instance, has shown that the rabbit, which is naturally refractory to quarter-ill, contracts this disease if the muscle receiving the inoculation is struck violently. Cadéac has also noticed that the resistance of the dog to the same disease may be overcome by placing an elastic ligature upon the base of the limb which is inoculated.—*Annales de Méd Vét.*

A Trypanosome of the Sheep.

H. M. Woodcock has already found, in England, trypanosomes in a sheep, and he is of opinion that these trypanosomes stand in genetic relationship to the flagellate organisms *Crithidia melophagia*, which are often demonstrable in the well-known ovine parasite, the *Melophagus ovinus*. His original article upon the subject appeared in *The Quarterly Journal of Microscopical Science*, of November, 1910. Paul Behn, having heard of Woodcock's work, but without having access to his original article, has since been investigating the same subject independently at the Hygienic Institute of the Berlin Veterinary School.

Altogether Behn examined five sheep which were accessible to him at the Institute. In one only of these he found trypanosomes, but they were extremely few in number, and the general condition of the animal seemed not to be affected by their presence.

The only method by which Behn could succeed in demonstrating trypanosomes in this sheep was by examining so-called "thick drops" stained with Giemsa's stain. He regards this "thick drop" method as the simplest and most reliable means of demonstrating the presence of trypanosomes when they are few in number, but it does not permit of their very accurate study. It certainly enables trypanosomes to be recognised as such, but does not permit exact observation of their morphological characters. In this case, however, no trypanosomes could be demonstrated by staining thinner layers of blood, or by centrifugalisation methods; and, in fact, they were so exceedingly few in number that only about one organism could be discovered in every fifth "thick drop."

So far as Behn was able to study the organism under these disadvantageous conditions, he describes it briefly as follows. The length of the trypanosome seems to range between 25 and 40 micro-millimetres, and its breadth is from 2 to 3 micro-millimetres. The macro-nucleus lies about in the middle of the body. The blepharoblast is fairly large, and lies considerably nearer to the macro-nucleus than to the tapering posterior extremity. Behn is not yet able to speak definitely of the length of the flagellum or the disposition of the undulating membrane, as both these structures can only very seldom be recognised in stained "thick drops."

The sheep in which the trypanosomes were found was the host of *Melophagus ovinus*, as were also two other of the sheep which Behn examined. Specimens of the *Melophagus ovinus*, when examined, were found to contain *Crithidia melophagia*.

Behn has already undertaken transmission experiments, by which he hopes soon to be able to give a more accurate account of the morphology of the trypanosome, and also eventually to clear up the question of its relationship to *Crithidia melophagia*. At present, he records his discovery of an ovine trypanosome as being the first observation of the kind, to his knowledge, made in Germany. Trypanosomes have also already been found in German cattle; and it is clear, therefore, that natural infection of both oxen and sheep by trypanosomes occurs in Germany. At present it seems very doubtful whether either the ovine or bovine German trypanosome has any pathologenic effect, but the further study of both species is desirable.—*Berliner Tier. Woch.*

Veterinary Degrees at Edinburgh.

The scheme of co-ordination between the University of Edinburgh and the Royal (Dick) Veterinary College, with the object of encouraging veterinary education by granting University degrees in B.Sc. and D.Sc. in veterinary science, will be submitted at an early date for the approval of the Privy Council. The candidate for the B.Sc. degree will require to have been engaged in veterinary study for not less than four academic years, and attendance at the Royal (Dick) Veterinary College is to qualify for admission to the University examinations for the degrees. It is also a provision that one year of study must be spent at the University of Edinburgh. It is proposed that the examination for the B.Sc. degree should comprise chemistry, botany, physics, zoology, anatomy, physiology, pathology, sanitary science, and veterinary hygiene. The degree of D.Sc. in veterinary science is to be open to those who have held the B.Sc. for three years, and the qualifying test is to be a thesis on original research work done by the candidate.

The Board of Management of the Royal (Dick) College have purchased a site at Summerhall, in the south-eastern part of the city, where the new headquarters of the College are to be established. Towards the estimated cost of £50,000 the Scottish Education Department has promised to contribute one-half. The other half has to be raised by the Board of Management, who have already received promises of nearly £20,000. An appeal is being made to those interested in the advancement of veterinary science to contribute the £5,500 still required.

Injury as a Causative Factor in Cancer.

Coley (*Ann. of Surg.*, April-May, 1911) attempts to disprove the view held by many practical surgeons, and recently advocated on statistical grounds by Phelps and Segond, that trauma has no influence whatever upon the development of cancer. Including under this term all forms of malignant disease, he argues that the old and popular belief of its origin in injury should be judged by the results of wide personal experience rather than by those of statistical study. Analyses are given of 970 cases of sarcoma and of 250 cases of carcinoma, all personally observed and carefully noted by Coley. In the first group a definite history of injury was made out in 225 cases, or 23 per cent. In 52 per cent. of these 225 cases the tumour developed within the first month after the time of the injury. In the series of 250 cases of carcinoma there was a history of antecedent trauma in 82, or 32·8 per cent. Of 120 cases of carcinoma of the breast included in this table, 50, or over 43 per cent., gave records of injury.

In dealing with the argument advanced by Segond, of the absence of any definite knowledge of the condition of the affected parts prior to the accident, Coley refers to several instances in his own practice, in which the healthy condition of the seat of post-traumatic cancer had been proved immediately prior to the accident, by careful examination. The number of such instances is certainly very small, but it is held that it is quite logical to believe that in most of the other collected cases in which circumstances did not permit the fulfilment of strict scientific conditions, especially a medical examination directly prior to the injury, the tranma played the same *rôle* in the development of the tumour. In the final portion of his long and exhaustive paper which is continued in the May number of the *Annals of Surgery*, the author states that in his belief the evidence based upon his extensive personal experience justifies the following conclusions: (1) Local trauma of any kind, from chronic irritation to a single local contusion, is not infrequently the direct exciting cause of malignant tumours of all types. (2) That a single local injury may cause a carcinoma as well as a sarcoma, is no longer open to speculation. The cases that the author has submitted fulfil, it is held, all the conditions necessary to establish a definite causal relationship between a single trauma and the development of a cancer. (3) This relationship in no way depends upon our ability to offer a scientific explanation of it: nor does it depend upon the acceptance of any one of the various hypotheses as to the etiology of cancer. It can be equally well explained whether we accept the extrinsic or intrinsic origin of malignant tumours. (4) Medico-legal side: The medico-legal aspect of this question is as yet in a most unsettled state. While we must admit that trauma often plays an important causative *rôle* in the formation of malignant tumours, this relationship must be clearly and definitely established according to principles and conditions very similar to, if not quite so exacting as, those laid down by Segond, before any legal liability can be admitted. —*B. M. J.*

DISEASES OF ANIMALS ACTS 1894 TO 1910, SUMMARY OF RETURNS.

Period	Anthrax. Outbreaks Confirm'd	Anthrax. Outbreaks Reported	Anthrax. Animals Confirm'd	Anthrax. Animals Reported	Foot-and-Mouth Disease. Outbreaks	Foot-and-Mouth Disease. Animals.	Glanders (including Farcy) Outbreaks	Glanders (including Farcy) Animals.	Counties Affected Animals Attacked	Sheep Scab. Outbreaks	Swine Fever. Outbreaks.	Swine Fever. Slaughtered. *
GT. BRITAIN. Week ended Nov. 11	17		20				5	15		15	32	357
Corresponding week in 1910		23		33			4	7	Essex 3	7	37	379
Corresponding week in 1909		25		31			12	25		12	28	256
Corresponding week in 1908		27		27			10	39	London 4	15	41	490
Total for 45 weeks, 1911	760		936		18	467	185	443	Middlesex 6	338	2146	25750
Corresponding period in 1910		1258		1503	2	15	323	940	Surrey 2	374	1292	12022
Corresponding period in 1909		1125		1471			474	1636		510	1460	13117
Corresponding period in 1908		947		1237	3	112	703	2190		678	1803	11373

Board of Agriculture and Fisheries, Nov. 14, 1911.

	Parasitic Mange (outbreaks)											
IRELAND. Week ended Nov. 11	1	1	...	...	...	...	...	4	7	108
Corresponding Week in 1910 ...	...	1	...	...	...	...	...	4	1	34
Corresponding Week in 1909 ...	...	...	...	...	...	...	...	5	..	...
Corresponding Week in 1908 ...	...	...	...	...	...	...	1	9	1	1
Total for 45 weeks, 1911 ...	8	15	...	...	2	3	53	287	122	2109
Corresponding period in 1910 ...	7	11	...	...	1	2	63	391	83	1903
Corresponding period in 1909 ...	8	8	...	...	...	...	70	335	86	1561
Corresponding period in 1908 ...	7	10	...	...	...	...	35	309	153	3535

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Nov. 13, 1911

NOTE.—The figures for the Current Year are approximate only.

* As Diseased or Exposed to Infection

Death from Glanders.

From an obituary notice in our contemporary, *The American Veterinary Review*, we take the following:—

"Dr. James H. Kelly died at his home in New Haven, Sunday, October 1st, 1911, in his fifty-fourth year, a victim of that horrible malady, glanders, after fifteen days of suffering, during most of which time he fully realised his condition and knew there was scarcely a fighting chance for life. In fact, it is believed he diagnosed his own case, and went to the physicians, his personal friends, with the facts. But even with this knowledge they were helpless, and despite every effort that they could put forth, and all the scientific knowledge they could summon to their aid, the brave patient at last surrendered and met the end with a calm courage and confidence that will always be a sacred memory to those who were near and dear to him.

The members of the American Veterinary Medical Association who attended its meeting at New Haven in 1906 will remember Dr. Kelly as the genial, active member of the local committee who looked after the entertainment and took care of the ladies in attendance. The line of carriages drawn up before the hotel headquarters to take the ladies to the points of interest in and around the "Elm City" is a sweet memory to many members of the association of the days when the horse was still an essential in the program of entertainment at A.V.M.A. conventions.

Cancer Research.

The tenth volume of the Annual Cancer Research Report from the Middlesex Hospital shows two points very fully—the vastness of the subject, and the very small knowledge which so far has been gleaned concerning it. No one of the researches can honestly be asserted to carry us one single step nearer the solution of the cancer problem, though some of them may very possibly do so indirectly by providing the basis of assured knowledge which shall enable some future worker to progress along lines not yet thought out.—*The Hospital.*

Horse Action at Dumfries.

Proof was led in Dumfries Sheriff Court on Thursday and Friday, the 2nd and 3rd inst.—before Sheriff Campion—in a small debt action by John Pollock, farmer, Papermill farm, Langside, Glasgow, against John Berwick, farmer, Albany Bank, Dumfries, for £100, being the agreed on price for a two-year-old Clydesdale filly named "Sweet Bloom," purchased by defender from pursuer on June 20, 1911, and delivered on July 3. The defence is that the filly was returned on the day after delivery on the ground that it was alleged to be unsound, having ringbone in both fore feet.

Mr. J. M. Haining, solicitor, Dumfries, on behalf of Messrs. Milligan and Stoba, writers, Dumfries, who were instructed by Mr. John Watson, writer, Glasgow, appeared for pursuer; and Mr. John Irving (of Messrs. Primrose and Gordon), solicitor, Dumfries, conducted the defence.

The Defence.

In view of the line of the defence the evidence on that side was first heard.

John Berwick, defender, formerly of the Burn, Thornhill, said he had some experience of veterinary science. He had an experience on farms for fully 30 years. On Whitsunday last he came to reside at Albany Bank. He had been Secretary of Dalbeattie Horse Society for 15 years. He had known pursuer for some time. He had visited his farm on various occasions along with the Dalbeattie deputation looking for horses to travel the district. In June of this year he was in want of a mare or filly for breeding purposes, and wrote to pursuer on June 17 that he wanted a Clydesdale mare or filly. Pursuer replied on June 19 stating that he had a Clydesdale mare for sale. He stated that she was thoroughly sound and correct. He mentioned also that he had two fillies. He stated nothing about them being sound. Following upon that letter, witness arranged to visit pursuers's farm at Langside. He visited the farm on June 20. Pursuer then showed witness a filly. Witness discussed the filly with pursuer, and when he said it would not suit him pursuer said he had another at grass four miles away, and if witness saw her he thought he would buy her. Pursuer guaranteed that she was sound and correct. Witness said he would not have time to go so far, as he had to catch the train at St. Enoch Station. Pursuer said that if he would go he would see that witness got back in time for the train, and witness went. The filly's name was "Sweet Bloom." Her colour was bay, with white hair through her; her two forelegs were white, and she had a white patch on the face. The sum of £120 was mentioned as the price of the filly. Witness told pursuer that the price was too big for him. Witness did not examine the filly then. They then left the field where the animals were grazing. They went to Langside station. Witness had a few minutes to wait before his train was due. When witness and pursuer got to the station platform pursuer asked witness if he was going to buy the filly. Witness said he could not face her at the price, but he would give pursuer £80 for her if he would warrant her sound and correct. Pursuer said he would take nothing of the kind, because he had refused a higher offer. As the train came in witness offered to give pursuer even money—£100. Pursuer said he would not take that sum. Just as the train was about to leave, and before witness got into the carriage, pursuer said he would take 100 guineas. Witness said he would not give this price, and as the train was moving pursuer shouted that he would give the filly at £100. The same conditions applied in this bargain as in the case of the previous animals referred to as to the filly being sound. The following day the witness wrote to pursuer on June 21 confirming his offer of £100. Witness asked pursuer in this letter to confirm the bargain in every way. He also asked for an extended pedigree of the filly. Pursuer replied on June 22, but he gave none of the information witness asked. He simply said that the filly was thoroughly sound. After further correspondence pursuer sent the guarantee on June 30. The filly arrived on Monday, July 3. Witness examined her, and found a perceptible enlargement round each fore coronet. There was a decided ring above the coronet on the near foot. It was quite hard. On the off foot the enlargement was pretty much the same, but it was not so hard and not so full in front. After examination he came to the conclusion that the filly was suffering from ringbone. After he had examined it he went over to Mr. M'Intosh, veterinary surgeon, and asked him to examine the filly. Mr. M'Intosh came over, and examined it, and gave witness a certificate saying the filly was unsound. Witness then wrote pursuer enclosing a copy of Mr. M'Intosh's certificate, and intimating that he was going to send back the filly on the following day, which he did. The next time witness saw the filly was at Messrs. Shannon's livery stables, Glasgow, on July 12. Principal Dewar and Mr. M'Intosh accompanied him. The filly was trotted out on a hard surface. She was not going square then. Witness examined her again, and found the same as he had found previously. Pursuer and witness came to terms at that time with regard to the disposal of the animal for sale. The filly was sold at Messrs. Laurie and Symington's auction mart at Lanark on August 28 for £71 to Mr. Lorimer, West Linton. The auctioneer announced in the ring that he had been

instructed to state that there had been a dispute about the condition of the filly, and that she had been returned for ringbone, but that four eminent veterinary surgeons had certified that she was thoroughly sound. The auctioneer did not mention that the filly had been condemned by a veterinary surgeon for ringbone. He saw the filly trotted out in one of the aisles of the mart. The aisle was covered with crushed gravel. Mr. MacFarlane, veterinary surgeon, examined her. The filly was hampered in her action, but not exactly lame. Previous to Mr. MacFarlane's examination witness examined the filly himself, and found it in the same state again at West Linton, and she was going decidedly lame. Mr. Lorimer there told witness that she had been blistered. She was wearing a "cradle" round her neck. The purpose of this cradle was to prevent the animal from putting her head to the part to which the blister had been applied. This suggested to witness that something was being done for the filly. Witness was perfectly sure by examination of the filly at Albany Bank that she had ringbone, and subsequent examination confirmed that opinion.

Would you use a mare of that kind for breeding purposes?—Not if I knew it.

Is ringbone hereditary?—Yes, it is supposed to be.

Would that have any effect on breeding?—Certainly, it being hereditary.

Cross-examined: Witness did not consider that Mr. Pollock's statement that the filly was thoroughly sound was a guarantee.

Do you consider that there was any attempt on the part of Mr. Pollock to evade giving a guarantee of soundness?—I was very much astonished at having to write five times before it was forthcoming.

If I tell you that this is a full guarantee of soundness will you admit that you have made a mistake in writing so often to Mr. Pollock?—Certainly not.

Witness said he did not examine the filly at Langside. Perhaps he put his hands on her to get her height. He did not use his hands on her feet or legs.

Was this filly a fine-boned or a strong-boned filly?—I would say fine-boned or good quality of bone.

Would you say fine-boned or good quality of bone?—I would say good quality, fairly strong-boned.

Does that mean strong-boned or fine-boned, which?—She was a quality filly all over.

Tell me what she was?—I think, generally speaking, a strong-boned animal would be an animal with round bones, which would be very objectionable. This filly has bones which one generally calls quality bones—broad, fine bones.

In the course of further examination witness said that the hoof heads were very prominent. She had a fairly good foot.

In the hands of careful judges do you think they would give a prize to a horse with ringbone?—Sometimes.

Witness would not be surprised if this filly had taken a prize. Regarding the treatment to the filly at West Linton, witness said that he had been told that the blister had been applied to her fore pasterns and her hoof heads. It was indicated to witness that the blisters were put on to increase the growth of hair. This was a common practice amongst Clydesdale breeders. But the blisters in this case might have been intended to serve a double purpose. The party who applied them might have thought that that they would remove the enlargement. The blisters took no effect on the filly's feet.

Re-examined: Witness said that it was at a small local show at Cathcart, held on Papermill farm, that the filly took a prize.

Expert Evidence.

Andrew J. M'Intosh, M.R.C.V.S., Dumfries, consulting inspector for the County, said that on Mr. Berwick's instructions he went to Albany Bank and examined the filly. It was not a general examination but a special examination. He found the two pasterns enlarged, and he considered the filly was unsound from ringbone. He gave a certificate to that effect.

The Sheriff: Is there any chance of making a mistake, or that it is anything else?—No, I have no doubt. I saw it with my own eyes, and confirmed it with handling the feet.

In further evidence witness said he found that the near foot was hard and firm. The off foot was slightly more inflamed. The ring was less complete in the off foot than in the near foot. Any man who knew his profession could easily distinguish inflammation of the coronatory substance from ringbone. There was greater lameness shown in the animal's movement with inflammation than with the ringbone.

Cross-examined: Witness said it was not the case that he had unusual views in regard to ringbone. Unless animals had ringbone he did not reject them.

Would you be surprised to hear that many eminent veterinary surgeons have stated there is no ringbone in this case?—A man should not be surprised at anything, but I would be surprised at a professional man who knows his profession doing so. She had good big feet in keeping with the rest of her structure. The ringbone in this case could not have been less than two months old. It might have been more. He did not think it was usual to find ringbone on a two-year-old filly that had never worked. He would scarcely say that in the majority of cases there was lameness with ringbone. He thought there was a natural hereditary tendency in this animal to have ringbone, because she had never worked, so that it was developing rather early. There were various causes of ringbone. The filly might have sprained herself galloping in the field, or she might have had an injury. There were different cures for ringbone, such as firing and blistering, or a continuous mercury plaster was sometimes used. An absorbing plaster with continued application was the best cure in his opinion.

Were you not surprised at the price she sold for when you had condemned her for ringbone?—Well, you don't know the machinery that may be at work. (Laughter.)

John Robert Urquhart Dewar, F.R.C.V.S., 18, Drummond Place, Edinburgh, said that he visited livery stables in Glasgow in July, and examined the filly in question. He found her, in his opinion, unsound from ringbone in her fore pasterns and off fore leg. The filly went lame. The irregularity was not the same in both feet. The ringbone was worse in the near foot. Towards the inside of the off foot it was worse outside. He had no difficulty in finding the disease. He was perfectly satisfied that it was ringbone. An animal suffering from ringbone would not be desirable for breeding purposes. Nobody who knew their work would confuse ringbone with any other disease. The pasterns of the filly were not normal; they did not correspond. He gave a certificate stating that the filly was unsound from ringbone.

Cross-examined: Witness said that he could not give an indication of the depth of the deposit in the bone. He never measured into ringbone in his life. It could not be measured in a living animal.

Can you give me an indication of the depth of the deposit?—It is not three feet. (Laughter.)

Mr. Haining: There is no need for that observation. Can you give me any indication?—It must have been over one-sixteenth of an inch. He could not say it was half an inch. There was nothing abnormal or unusual otherwise about the filly. It had just the average size of feet. He was of the opinion that the ringbone was hereditary. His reason for thinking that was because the filly had never worked. It was unusual for a filly of this age that had never worked to have ringbone. Ringbone showed most when the ringbone was forming. In

stages of ringbone there might be no pain, but they were difficult to specify.

Oh, but you are a professor and should have no difficulty?—But professors have difficulties as well as lawyers.

Richard Rutherford, in practice at 26, Castle Terrace, Edinburgh, who has for 25 years acted as examiner of the Royal College, said he visited the livery stables at Langside on 14th July at the request of Mr. M'Intosh, examined the filly in question, and found it to be unsound from ringbone disease on both fore pasterns. She was lame on the right or off foreleg, where the enlargement was the larger of the two. The disease could not be mistaken for anything else by any professional man who knew his business. Any natural enlargement of the bones would have been the same all round, which was not the case here. With that disease the filly would not be suitable for breeding purposes, as on account of its being hereditary horses with ringbone were banned by all the respectable horse-breeding societies in this country and by the colonies.

Cross-examined: He was not a breeder, and it would take a breeder with large experience to say whether it was usual to find ringbone in animals so young, but as an examiner for shows he could say unreservedly that it was quite usual to find it at two or three years old. He had seen hundreds of cases of pronounced parts due to conformation, but there was nothing of the sort in this case. The ringbone should have been visible three months before he saw it.

The Sheriff: You mean by a professional eye?—Clydesdale breeders have professional eyes sufficient for most purposes. Ringbone caused lameness during the active stage when the disease was being thrown out, and in its uninterrupted progress the horse would get so lame as to have to be destroyed, and hundreds of horses were sent out of this country to the continent, because not allowed to work with it. He had never seen, but had heard of a case in which a horse was said to be condemned for ringbone of all four pasterns, but fortunately or unfortunately, it took colic and died, and the horse was found to have had nothing wrong with it. (Laughter.) That was a mistake for normal prominence, but it happened in the case of a young examiner, and not an experienced practitioner.

Andrew Spruell, F.R.C.V.S., Dundee, said he visited the livery stables on July 19th, examined the filly, and found her fore feet "lumpy" round the coronet in process of forming ringbone. He could not definitely say she was lame, but she was going "short," which was especially noticeable in turning. He did not think there could be any natural formation that could produce that lumpiness. The disease would certainly have existed on 20th June last, and the filly would be quite unsuitable for breeding, because of the hereditary nature of the disease.

Cross-examined: The extent of the deposit on the off fore leg would be about an inch, tapering off, and that would be about the point of greatest development. He could best describe it by saying if one were to take a bantam's egg, split it in two, and lay the half on the place that would give about the depth at the most prominent part, giving about half an inch. He did not think the joint was affected, but it would be as time went on. She was a very nice filly, apart from this. Until Clydesdales went to work this disease was rarely found in them.

John Baird, M.R.C.V.S., Dumfries, formerly at Thornhill, Dumfries, and Keighley, Yorkshire, said he inspected the filly at the Langside stables on 21st August, and found the same conditions as previous witnesses. When the filly was being trotted out Mr. M'Intosh shook his umbrella, and she made a jump, and came down dead lame on the off fore foot. It was an ordinary macadam road. The symptoms could not be mistaken for naturally large articulation of the joint.

Cross-examined: He did not travel with Mr. M'Intosh to Glasgow, but met him at St. Enoch's. Mr. M'Intosh simply told him he was wanted to examine a horse, and he (witness) did not know beforehand what was supposed to be wrong. He did not think the ringbone could have been passed by any qualified V.S. He was an old student of Principal M'Call, Glasgow.

He could not miss that?—I can't say; it is not for me to say. (Laughter.)

You could not understand any professional man passing it?—Any man could do what he likes, but I would not have passed it.

Have you advised anybody in this neighbourhood to bid for it at the sale as a breeding filly?—No, I have not. I am quite positive as to that.

Duncan Macfarlane, M.R.C.V.S., Stirling, said he went by request on 28th August to Messrs. Laurie and Symington's mart at Lanark, and examined the filly, and found the pronounced symptoms of ringbone. He had her trotted out in a passage between the pens laid with soft metal, which gave her a good chance, as the concussion would not be very hard. She went quite "creeping" on both fore feet—not going free although she did not nod like a lame horse.

Cross-examined: Mr. Berwick, who wrote asking him to go to Lanark, was quite a stranger to him. He saw the filly sold, and she made £71.

Was that a price for a lame horse to make?—I did not say she was lame. It was well enough known the beast was in dispute, and as far as the price was concerned I do not think it should come much into question, as sometimes these things are got for a purpose.

But she did get rather a good price; would not that make you inclined to think some people thought the filly all right?—Some people might not see anything wrong with it. I saw one of the farmers put his hands on it and say, "I don't think there's much wrong with it," but that is nothing. (Laughter.)

Re-examined: When sold she was not run much round the ring; she was merely walked round. The fact she was in foal to a well known horse would make a big alteration in her price. He heard the auctioneer say the dispute was about ringbone, but did not hear him say that she had been passed by anyone.

Alex. Inglis M'Callum, M.R.C.V.S., Edinburgh, said he inspected the filly at the farm at West Linton on 30th September with Mr. M'Intosh, V.S., Mr. Berwick, and Mr. Storey, V.S., of East Linton. He found the ringbone distinctly visible without manipulation before handling. The filly would be quite unsuitable for breeding "because like begets like." She was a beautiful mare but for this defect. She had a cradle on her head; he was told some application had been applied to the diseased part, but saw no traces of the treatment, though he understood it had been only recently applied. He did not see that the application was necessary to increase the hair on the pasterns, as there was plenty of it and silky. She was unsound in both fore feet from the ringbone, and the right foot was hot, and at the inflammatory stage.

Cross-examined: There was nothing else to account for the lameness, and he himself tried the shoes with a hammer.

John Storey, M.R.C.V.S., East Linton, spoke to making examination on the same date as previous witness, and finding similar results.

Cross-examined: He would not like to say that the beast was going lame from inflammation.

But quite a number of witnesses have had no difficulty in saying that?—Perhaps, but I may not be so clever as some of them. (Laughter.)

But you may be more conscientious. (Laughter)?—

All I can say is she was not going dead lame, though lame.

Proof was continued on Friday.

THE PURSUER'S CASE.

John Pollock, the pursuer, said he had had experience of Clydesdales for 40 years. He had possessed in his time some of the best and most valuable Clydesdales, amongst which were Flashwood, Gallant Lea, Hiawatha, and Montrave Viceroy. He had bought them at all ages and at large prices. From his experience he could distinguish ringbone. He bought this filly when she was six months old. He knew the filly's pedigree, and there was no trace among the entries in that pedigree of ringbone or any other disease. Her predecessors had been shown for the last 50 years, and never were condemned neither on her sire's side nor the dam's side. The filly was shown at Cathcart and Eastwood show, where there was a very good show of Clydesdales. This filly was first in her class after a tie. She was carefully examined particularly, because there was a tie. The judges were well-known Clydesdale men. The filly was carefully examined by Mr. Berwick, the defender, when he came to Papermill farm. He ran his hands over her just in the proper places and way, so that witness remarked, "Ye ken a horse, my good man." Mr. Berwick put his hands on the hoofs of the filly, and had no objection to make. Witness declared that she was sound, and he considered that that was all the guarantee required He thought Mr. Berwick's reason for writing so often for further guarantee was that he was wanting to get out of the deal. Before he sent the filly to Mr. Berwick, and as the result of the correspondence, witness took the precaution to get Prof. John R. M'Call to examine the filly. He granted a certificate that she was sound. In an auction mart the statement by the auctioneer or in a catalogue that a beast "is sound" included everything. Defender had never asked him for a veterinary surgeon's certificate. Witness had had a previous offer on the day of the cattle show on June 3 by Mr. John F. Houston, veterinary surgeon, Paisley, of £100, but he did not accept it. Mr. Houston was acting for a friend. Mr. Houston examined her twice that day. Witness had also visit from Mr. David Hume, M.R.C.V.S., Haddington, who examined the filly, and said it was sound and correct. He also was acting for a client with a view to purchase.

Cross-examined: I was in court all eay yesterday. I did not see Mr. Lorimer, the present owner of the filly in court. I do not know him.

Were you and your witnesses all staying at the Station Hotel last night?—Yes.

Did you discuss in presence of the other witnesses to follow you what had happened in court?—No.

Was Mr. Robb, jun., of Glasgow, who was assisting your agent yesterday, not present in the hotel with your witnesses?—He went away home last night.

Was he not present at a discussion with your other witnesses as to what happened in court?—I cannot say, for I was not present at the time.

Was the evidence of the various expert witnesses for the pursuer under discussion amongst you last night?—Oh, it was talked over.

Did you resolve what line to take up to-day in view of that evidence?—Only one line—to tell the truth.

In particular, was not the evidence of Mr. Baird, Dumfries, discussed last night in your presence and the presence of Mr. Robb?—Oh, they might all be talked over.

The Sheriff: That sort of thing is unavoidable when you have a two-days' proof.

In further cross-examination witness said the filly was bred by Mr. James Dunlop, Old Hall, Fenwick, Stewarton. She had been traced back to 1866. Her grandmother had been sold for £180. There were four fillies at Cathcart show.

Mr. Finlay Houston, veterinary surgeon, 26 St. James' Street, Paisley, said that he had examined the filly twice on the day of the Cathcart show. She was absolutely sound. He offered Mr. Pollock £100 for her, but Mr. Pollock wanted £110, and he did not sell it.

Cross-examined: Witnesss said he had never seen the filly since. It was quite possible that there might be something wrong now. That was five months ago. She had beautiful fine bones. There was a small splint in her fore leg. There was no swelling, and she was absolutely sound.

Andrew Hume, veterinary surgeon, Haddington, said he had examined the filly on June 12, and found her absolutely sound in every respect.

John C. Johnstone, veterinary surgeon, Peebles, said he examined the filly at West Linton on September 26 for the insurance company, and found her absolutely sound. He saw her again on Oct. 14. He examined her again, and she was still sound.

Cross-examined: Mr. Lorimer had been treating the filly's hoofs. The purpose of the blistering was to increase the growth of hair.

Prof. John R. McCall, M.R.C.V.S., Glasgow, said that at Mr. Pollock's request he examined the filly on July 1. He granted a certificate to the effect that the filly was sound with the exception of a small splint on the fore leg. He did not call that unsoundness. He guaranteed the filly sound and free from all hereditary diseases so far as he could detect. He found it was very rare to see ringbone in a Clydesdale less than four years old. Ringbone gave rise to lameness in its formation. He was an authority on bone diseases. It was one of his subjects in his lectures.

Cross-examined: Is a splint unsoundness?—It is not a real or practical unsoundness.

Would a mare in splint be considered to be sound and correct in every way?—That is a legal question.

Further pressed for an opinion on the matter, witness said that there were perhaps 80 per cent. of harness horses that had splint, and yet were perfectly sound. There were some varieties of ringbone which were believed to be hereditary. A horse suffering from ringbone was usually banned in a horse-breeding society. It was not wise to breed with mares suffering from ringbone. But it depended on the variety of ringbone.

In a young animal what would you expect to be the cause of ringbone?—It might be various causes.

Is the commonest cause hereditary?—There are so few cases seen in young animals that it would be difficult to answer that question.

Witness could not recollect having examined a two-year-old suffering from ringbone. He had seen two cases in young animals of so-called ringbone, but these were caused by accidents. Is was quite possible that a two-year-old animal could have ringbone.

James Weir, farmer and horse-breeder, Sanderlands, Lanark, said he had acted as a judge for Clydesdales in the United Kingdom, America, and Canada. He was at Messrs. Laurie and Symington's Auction Mart, Lanark, on August 28th, when the filly was sold. He examined the filly before the sale, and he found her sound so far as he knew. He did not find the slightest trace of ringbone. None of her forebears had had ringbone. They were all very prominent high-class horses. He advised Mr. Lorimer to use a liniment to increase the growth of hair over the hoofs, and as Mr. Lorimer was not long in the business witness prepared a liniment and sent it to Mr. Lorimer.

John Jarvie, veterinary surgeon, Carluke, said he was veterinary referee for Messrs. Laurie and Symington, Lanark. He examined the filly the day it was sold, and found it was thoroughly sound.

Andrew Robb, veterinary surgeon, 16, Ward Street, Glasgow, said he examined the filly at Langside on July 4th, and granted a certificate that the animal was sound on the following day.

Thomas Purdie, Summerville, Sanderlands, Lanark, described as a well-known dealer in Clydesdales, said he examined the filly at Messrs. Laurie and Symington's Auction Mart, and found it was sound. It got a sufficient test to show any lameness. Witness made a bid for her.

Cross-examined: He did not buy her, because it went beyond his price

A Case of Mistaken Diagnosis.

Principal James M'Call, F.R.C.V.S., Glasgow, said he had been a member of the Council of the Royal College for upwards of 30 years, was lecturer in the Edinburgh College from 1857 to '59, and in 1863, founded the Glasgow Veterinary College, and had since acted as principal, and held many official appointments, including that of veterinary inspector for the Local Authority of Glasgow, among the duties under which were those of the examination of cattle and horses exported and imported. He had been a breeder of horses since 1865. He knew Mr. Pollock as a well-known breeder, and on his behalf examined the filly Sweet Bloom on 19th July of this year. He found her perfectly sound. She was quite a strong, healthy animal, with bold and prominent hoof heads, in keeping with the formation of her limbs. She has good big feet, and in his opinion these were absolutely free from disease. It was most exceptional to find ringbone or sidebones in a two-year-old Clydesdale.

Have you ever seen a case where strong prominences or pronounced joints have been mistaken by a professional man and others for ringbone?—I have. I can cite one particular case. In the first place I may say I have a difficulty in getting my students really to believe that there are two conditions that assimilate to one another very much, and that is the natural prominences of the bones and the unnatural, abnormal or diseased prominences. There was a stallion belonging to Mr. Graham, of Eden Grove, Carlisle, which was exhibited about twenty years ago at the English Agricultural Society's show, and was placed first. Before a prize is got there an examination of the beast is conducted by several veterinary surgeons. It was also shown at some other shows, and after being examined placed first. Then it was shown at the Yorkshire Society's show, and was drawn among the horses to get a prize, but when submitted to veterinary examination was condemned for having ringbone. After the horse came back Mr. Graham wrote to me to come and examine the horse. I was perfectly ignorant of what the horse had been rejected for, but I knew I would not be there unless there was a dispute, and I made my examination all the more stringent. I told Mr. Graham and his veterinary surgeon, Mr. Bell, of Carlisle, that I could not see anything wrong with the horse, and that he was very sound. He replied, "Will you be kind enough to put your hand over his hoofheads, he has been condemned for ringbone?" I went back and did so, and said "No, I cannot agree with that. There are prominent sides to the bones all round, but I do not consider he has ringbone." Unfortunately that horse died within a month or two, and a preparation was made of his bones, but not by me, neither did I see the bones, but the bones were submitted by Mr. Bell, of Carlisle, at a meeting of the North of England Veterinary Society to the members present, and there was not a vestige of ringbone, but only prominences of the bones. The formation of hoof heads and pasterns of this filly in question were just identically the same as that of that horse. They were normal, and there was not a vestige of abnormal growth. These prominences are in some animals much more developed than in others. It is identically the same with the wrists of the human subject. I would find a considerable number of persons with much larger prominences of wrist than myself, and it might as well be said that that was ringbone. I am of opinion that the filly has very prominent processes. She is just the thing I want with good big bones, clean bones, and a big hoof head. It does not matter how good the animal may be, Clydesdale breeders wont give the price unless it has big feet, because it requires to have a big foot to carry a big body. It is also very desirable to have longish hair on the hoof head; when you have a nice quantity of hair flowing over the coronet it makes the foot look the bigger, and it is quite common to blister round the coronet to stimulate the growth of the hair.

Cross-examined: Have you come across ringbone in two-year-olds?—I have come across two-year-olds that were said to have had it, and they had not. I never examined a two-year-old or younger animal suffering from it. I have seen them said to have ringbone when it was only natural formation.

But in that case would you not have symmetry all round the bone, whereas in ringbone it might be in patches?—Yes, quite.

There is nothing impossible about finding it at two-years-old?—No, but that would as a rule be from external injury.

Might is not be hereditary at that age?—I cannot tell, no man can tell when it is hereditary or not. It might be hereditary from predisposition.

Re-examined: Did you ever feel ringbone that yielded to pressure?—It could not; it is a bony substance.

We were told by Mr. Spruell, of Dundee, that he considered there was ringbone on this filly's fore feet, that it had been growing a year, and that it still suffered from it. Could that possibly be true?—I don't understand it. I would not like to say it was untrue, but I cannot believe it. (Laughter.)

James Lindsay, veterinary surgeon, Dumfries, said he examined the filly, Sweet Bloom, in the livery stables at Glasgow on July 24th. He made a thorough examination of the filly, lasting two hours. He moved and trotted her about. He found her absolutely sound. There was no suspicion of ringbone about her. She went sound and sweet.

Would you be surprised to hear that witnesses have said the filly has large articulation?—I would not be surprised at anything.

Mr. Haining asked permission to put Mr. Lorimer in the witness-box to clear up the matter in regard to the application of liniment to the filly's feet.

Mr. Irving took objection to this evidence, because there was no citation, and because Mr. Lorimer was in the court while Mr. Berwick was examined the previous day, and also during part of Mr. M'Intosh's evidence. He thought it was quite irregular that this witness should be called.

The Sheriff agreed to allow the evidence.

Henry Lorimer, West Linton, the present owner of the filly, said he had used the liniment on the hoof heads for the purpose of making hair grow on the filly's legs. He was advised to do this by Mr. Weir, Lanark, and he received the liniment from him.

Robert Pollock, Papermill Farm, Langside, Glasgow, son of pursuer, said that it was he who drove his father and defender from Papermill Farm to the place where the filly was grazing four miles from the farm on June 20. He was there when defender was looking at the filly. Defender examined the animal, and was clearly satisfied with it. He examined the hoofs, as any business man would do.

This concluded the evidence, and the case was adjourned for debate.

Annual Report, Army Veterinary Department, India, 1901-11.

The Report to hand, like his predecessors, records a long struggle against animal diseases at odds which we in Britain cannot realize—the bald figures may reach our understanding, they fail to impress our imagination. Throughout the report is the same undernote of increasing work, with little increase in men to meet it. The following extracts give an outline of the report:

Officers of the Civil Veterinary Department for the Official Year April, 1910, to March, 1911.

Inspector-General	Col. H. T. Pease, C.I.E.
	Lieut.-Col. G. H. Evans *
Imperial Bacteriologist,	Maj. F. S. H. Baldrey
	Maj. J. D. E. Holmes, M.A., D.SC.
Assistant „	H. E. Cross, Esq.
Physiological Chemist,	P. Hartley, Esq., D.Sc. (Lond).
Supt. Government Cattle Farm, Hissar,	Lieut.-Col. J. Farmer
Supt. United Provinces,	E. W. Oliver, Esq.
2nd Supt. „	C. W. Wilson, Esq.
Chief. Supt., Punjab.	Maj. G. K. Walker
	V. de V. H. Woodley, Esq.
Supt. N.W. Frontier Prov. and N. Punjab,	„ S. Carless, Esq.
Supt., South Punjab,	G. Taylor, Esq.
Supt. Sind, Baluchistan and Rajputana,	Maj. A. S. Trydell
Prin. Punjab Vet. Coll.,	Maj. A. Smith
Prof. „ „	E. Burke, Esq.
Prof. Sanitary Science, Punjab Vet. College,	S. H. Gaiger, Esq.
Principal, Bombay Veterinary College,	M. H. Sowerby, Esq.
	K. Hewlett, Esq.
Assistant Principal, Bombay Vet. College,	N. D. Dhakmarvala, Esq.
	M. H. Sowerby, Esq.
Supt., Bombay,	K. Hewlett, Esq.
	Lieut.-Col. H. M. Maxwell
Prin. Bengal Vet. Coll.,	Col. F. Raymond
Supt. Bengal,	D. Quinlan, Esq.
„ E. „ and Assam,	W. Harris, Esq.
Prin. Madras Vet. Coll.,	D. A. D. Aitchison, Esq.
Supt. Madras,	Capt. W. O. Dawson
	F. Ware, Esq.
„ Burma,	Lieut.-Col. G. H. Evans
	T. Rennie, Esq.
2nd Supt. Burma,	C. J. N. Cameron, Esq.
3rd „ „	...
Superintendent,	F. Ware, Esq.
Central Provinces,	Maj. F. H. S. Baldrey
Veterinary Officer Investigating camel diseases,	Col. H. T. Pease, C.I.E.
	A. S. Leese, Esq.
Attached for training	R. Branford, Esq.
Punjab	J. G. Cattell, Esq.
	S. Carless, Esq.
Central Provinces,	Maj. W. O. Dawson *
Gov. cattle farm, Hissar,	R. Branford, Esq. *
Bengal, Vet. Coll.,	P. J. Kerr, Esq. *

* The second name is the officer holding office, March, 1911.

Veterinary Instruction.

Bengal. Taking the percentage of passes, the Bengal College stands first. In the first year's class, 39 students out of 50 sent up were successful; in the second, 28 out of 37: and in the final year's test 35 out of 46, giving a general average of 76·69. During the vacation, eight Army transport drivers were trained as dressers.

The number of cases in the hospital was 5869 against 5680. The fees realised for treatment, etc, amounted to Rs. 14,869-12-8. A new ambulance was urgently needed and Babu Govindram Singhonia presented Rs. 1000 for the purchase of a conveyance.

The Principal remarks on the difficulty in obtaining funds for the further development of the College.

Punjab. In the first year's class there were 63 students of whom 48 passed; 76 in the second year, and of these 59 were successful. Out of a class of 76 in the final year 53 qualified, giving a general percentage of 74·41.

In addition to the ordinary work, a three months' course was given to 43 men from the Transport Department. A nine months' course in practical shoeing was arranged for; 22 men attended, and at the examination held on completion of the course, 16 men satisfied the examiners.

The number of cases treated during the year was 5597. The sum of Rs. 12046-11-1 was paid into the Treasury.

Madras. First year's class—number presented 18, passed 13; second year—22, passed 16; and in the final year—18, of whom 10 qualified. General average 67·24 per cent.

At this College owing to the small number of pupils in each of the classes, the lecturers were able, and evidently had devoted much trouble and care to the training of the students, and the examiners were gratified to find the successful students so well up in their work.

The number of cases treated in the hospital was 2145, and the receipts from hospital charges amounted to Rs. 11,099-14-6.

The Principal has pointed out the great difficulty experienced in obtaining sufficiently educated students. During the year, after advertising the College prospectus in the Fort St. George and local gazettes, and having expended the sum of Rs. 1200 in advertising in newspapers, he succeeded in obtaining only 11 matriculates. This difficulty exists elsewhere. The task imposed on lecturers in expecting them to teach Indian students up to a certain standard, is rendered doubly difficult when in order to make up classes, they are obliged to admit students known to them to be very deficient in general education.

Bombay. 23 students presented themselves for the first professional and 15 passed; in the second year 27, of whom 21 were successful; and in the final year's class, 41 men appeared and 22 passed. General average 63·73 per cent.

During the long vacation, a class was held for the training of drivers of the Supply and Transport Corps as dressers. Thirteen drivers attended the course.

During the year, 4550 animals received treatment. Receipts amounted to Rs. 8887-10-0.

Various improvements to the College buildings have been carried out. Owing to a comprehensive scheme for the general improvement of the College premises being under consideration, the construction of certain proposed buildings has been held in abeyance.

Burma. At the beginning of the year there were 33 pupils in the School—20 in the senior and 13 in the junior class. Eighteen pupils in the senior class were examined and 14 qualified. A fresh batch of 13 pupils has been admitted.

There has been a considerable increase in the number of cases treated at Insein, 738 against 240 last year, and there seems ample reason to believe that when suitable accommodation (which at present is temporary) is provided, that a further increase may be anticipated. The work at the laboratory has also increased to a great extent owing to the large number of specimens received from all parts of the Province. The Superintendent observes that, "the efforts of the staff have been taxed to the utmost to deal with the amount of work now presented, and will be totally insufficient to cope with much further increase."

Treatment of Disease.

The total mortality reported, as compared with the previous year, shows a decrease of 461 under "Equines," and increases of 6942 and 423 under "Bovines" and "Others," respectively.

Glanders. The number of cases of glanders reported is 229 against 236 in the previous year. Of the total number, 130 or nearly 57 per cent. were reported from Bengal. East Bengal and Assam shows an increase of 35 over last year's figures, Punjab 3, and North-West Frontier Province 2. United Provinces show a decrease of 17 and Bengal 30. Diagnosis was in all cases confirmed by the mallein test.

The policy of granting compensation to owners of animals destroyed for glanders is reported to have greatly improved the working facilities for the suppression of this disease. Measures can now be promptly taken to stamp it out.

It may not be out of place to mention here, that owing to the very serious prevalence of glanders within the municipal limits of Rangoon, especially so in the gharry stables of the town and suburbs, the services of an officer of the Civil Veterinary Department was specially asked for to assist the municipal authorities in dealing with the disease. Mr. Branford was placed on special duty on the 23rd December and remained on this work till the 15th March, when he had to leave in order to take charge of the Hissar Farm during the absence of Lieut.-Colonel Farmer whose state of health necessitated his proceeding on leave.

Such work, at all times unpleasant, was rendered exceedingly so owing to the hostile attitude of native owners. I have great pleasure in reporting that Mr. Branford merits much praise for his tact and care in dealing with the people, and also for the amount of work he performed during the above-named period.

Anthrax. A decrease is reported under this heading, the number being 16,425 "Equines," "Bovines" and "Others," against 17,264 last rear. Under the head "Equines" 46 deaths are reported against 51 in the preceding year. The diagnosis of cases of Anthrax reported from the United Provinces, Central Provinces, Bengal and Eastern Bengal and Assam, was confirmed by bacteriological examination.

Surra.—The total mortality recorded is 767 against 1,126 last year. After the annual report had been sent to the Press, 417 cases were reported amongst mules and ponies in Burma, of which 312 cases were recorded in North Shan States, 78 in South Shan States, and 27 in Burma. Surra is believed to have been rife amongst caravan animals returning from Chiengmai (in Siam) and to have been generally prevalent along the Burma-Siam frontier.

There is no question that many more cases occurred than those recorded.

Other contagious diseases.—The number of cases reported under this head amounts to 46,542 against 47,143 last year. No details, however, as to the nature of these ailments have been furnished.

Rinderpest.—The number of deaths reported this year is 156,978 against 158,425 shown in last year's returns.

Foot-and-mouth disease.—A decrease is shown under this head, the figures being 25,548 against 27,041 last year.

Hæmorrhagic Septicæmia and Black-quarter.—The total number of deaths recorded under these two headings is 63,413 against 52,370 last year. Preventive inoculation against these diseases was adopted with encouraging results.

Other contagious diseases met with among animals in addition to those already specified, were distemper, rabies, and contagious pleuro-pneumonia. Increases are recorded under rabies and pleuro-pneumonia.

Camels.—Some items of interest from a detailed report which has been submitted, are as follows: Mortality in 8 Silladar Camel Corps now down to 13·3% on an average strength of 8,230 camels, which is satisfactory. A very interesting note on surra spreading in the sandy desert of the Bikanir State. That camel surra may spread in years of unusual rainfall in this desert is rather a startling fact. No such outbreaks have been observed in the deserts of the Punjab. The only species of biting fly present was a Lyperosia *(Lyperosia minuta, Bezzi).* These flies occurred in swarms on every camel, particularly favouring the lower portion of the neck, region of the hump and knees. They are a source of great annoyance and cause intense irritation. Lyperosia appear to have only once before on good grounds been suspected as a transmitter of surra, *i.e.* amongst cattle in Rhodesia (Kinghorn and Montgomery). It is clear that this outbreak occurred in the absence of Tabanus, Stomoxys, or other biting flies.

Mr. Leese has continued to devote himself wholeheartedly to the study of surra and its treatment. Every endeavour is being made to supply him with affected camels in a condition fit to undergo treatment, in order that he may have ample material to uninterruptedly pursue his investigations. Some cases have apparently been cured, but in regard to statements of cures in camels much caution is desirable owing to the peculiar characters of the disease in these animals. The treatment considered most promising is by the use of Atoxyl and Tartar emetic (intravenously), and Sodium Arsenate solution (per os).

Bilharziosis.—During a search for adult filariæ a parasite was found in the mesenteric veins of the large intestines which proved to be *Schistosomum Indicum.* (Identification confirmed by Dr. Leiper, of London School of Tropical Medicine). Subsequently it was found in five out of eighteen camels examined. It would seem the parasite is only of practical importance when the infestation is severe.

Peritonitis.—Last year a specific peritonitis was met with in Montgomery district. The larvæ of the *Linguatula tænioides* are extremely common in camels and show a predilection for the group of glands draining the cœcum and colon. This year a case was again met with and there seems little doubt of their association with peritonitis in the camel. A post-mortem examination revealed the glands of the cœcum and colon intensely inflamed. They contained large numbers of larvæ and were full of cavities which had been occupied by parasites; many of these cavities opened on the outer surface of the glands. No free larvæ were found in the peritoneal cavity nor was there any enteritis nor any other channel of infection found. The functional destruction of the glands would appear to have allowed access of bacteria from the intestine to the peritoneum. Last year, hæmorrhage from the nose was observed as an occasional symptom.

Mr. Leese has been most energetic and unremitting in his labours to advance our knowledge of the diseases of the camel. Considering that his work has been carried out often in trying circumstances, the success achieved is highly commendable. I consider we are greatly indebted to him not only for the zealous manner in which he has carried on his work, but also for the progress made.

The number of veterinary assistants employed has increased by nearly a hundred, viz., from 517 to 614. With the exception of Rajputana, additions have been made in every Province. Madras shows 38 veterinary assistants now employed. In last year's report none were recorded. Over 11,000 more villages were visited, and the number of cases treated (excluding castrations) exceeded those of last year by 63,741. There were 327 veterinary dispensaries in working order during the

year under report. In Rajputana and Bengal the numbers remain the same as last year; in all other Provinces there is an increase shown.

Bacteriological Laboratory.

Major F. S. H. Baldrey officiated as Imperial Bacteriologist until the 4th November, 1910, on which date Major J. D. E. Holmes assumed charge. Mr. H. E. Cross and Dr. P. Hartley held their respective charges of Assistant Bacteriologist and Physiological Chemist. The three European Laboratory Assistants held their respective appointments during the year.

Preparation of Sera.

Rinderpest anti-serum.—The number of doses of anti-rinderpest serum prepared during the year amounted to 577,969 as against 409,078 manufactured last year, roughly an increase of 169,000 doses. The issue of serum amounted to 533,799 as compared with 446,981 during the year 1909-1910.

The demand for serum increases each year and is far greater than the output. Many indents could not be complied with at all, or only in part. It is interesting to find that the use of serum is being so much appreciated in Native States. In Mysore some 27,000 animals have been injected during the past three years, and so great is the popularity of the method that at times it has been impossible to meet the demands, and this has raised the question of providing another laboratory for serum preparation.

Anthrax anti-serum.—During the past year 5,415 doses were prepared against 12,168 during the previous year. The issue amounted to 9,715 doses against 12,404 of the previous year. Its preparation was regulated according to the demand in the field. Investigations regarding the practical value of anti-anthrax serum and vaccines have been conducted during the past two years and a preliminary report will be published shortly.

Hæmorrhagic Septicæmia.—50,350 doses of Hæmorrhagic septiæmia vaccine were prepared and all issued, as against 8,320, or 42,030 doses more than in the previous year. No unfavourable reports were received with regard to the efficacy of the vaccine, and the figures show satisfactory results.

Charbon Symptomatique.—33,400 doses of single vaccine in pillule form were prepared; 19,900 doses of vaccine and 536 of serum were issued to the various Superintendents. The vaccine prepared at the laboratory appears to be very efficacious. The mortality in animals vaccinated in the Punjab amounted to 07%, whereas in untreated animals, the usual death-rate is something like 88%.

Strangles.—During the past year 1,829 doses of anti-streptococcus serum and 500 doses of vaccine were prepared. The total issue of these products amounted to 1,617 doses. This serum was prepared to meet the demand from the Army Remount Department, but no definite results have been reported to this Department.

Mallein.—Twelve thousand nine hundred and forty-one (12,941) doses of mallein were prepared, against 9,515 doses during the previous year. With a balance of 2,730 doses from the previous year and 598 returned from the field as unused balance, the total issue amounted to 16,229 doses.

Tuberculin.—During the year under report 209 doses of tuberculin were prepared and 188 issued.

Specimens examined.—Two hundred and ten (210) specimens were received for examination and report during the past official year, against 84 during the previous year.

Training of Veterinary Assistants.—Seventeen Veterinary Assistants attended the course of training, eight at Muktesar and nine at Bareilly, against 36 during the past year. The decrease is due to the facilities now afforded in the Veterinary Colleges for training students in inoculation work.

As already noted, the whole staff—superior and subordinate—have had very hard work throughout the year, indeed the pressure at times has been so great that a number of members of the staff have had to be employed from daylight to dark daily, including Sundays and Gazetted holidays. The Imperial Bacteriologist records his appreciation of the excellent work and co-operation of the whole staff, and I have much pleasure in endorsing his remarks.

Much credit is due to Majors Holmes and Baldrey, Mr. Cross and Dr. Hartley for having, under trying circumstances, accomplished so much during the year.

Government Cattle Farm, Hissar.

Lieut.-Col. J. Farmer held charge throughout the year under report. The operations at the farm have on the whole been successful.

It was handed over temporarily to the Civil Veterinary Department on the 1st April, 1899, and was transferred permanently to the Department on the 1st April, 1910. There is no denying that during the above-named period the farm in its various branches has been vastly improved, and financially it is perhaps now in a more satisfactory state than at any time during its history.

Conditions, however, exist which render it almost impossible to make the farm all that could be desired. It is most unfortunate that at the time the farm was started, those responsible failed to close all public highways passing through the acquired tract of country. The result of such an omission has made the charge of the Hissar Farm both an anxious and highly responsible one. In spite of all possible precautions, with disease at times prevailing all around, infection through the agency of diseased animals from without occurs from time to time. Owing to unremitting attention the outbreaks are few, and in recent years the farm has escaped the severe ravages committed by contagious maladies in days gone by. During the year cases of the following diseased were reported, viz., Rinderpest, Foot-and-mouth disease, Black-quarter, Strangles, and Sheep-pox. As a result of the prompt action taken by the Superintendent, the outbreak of rinderpest was rapidly checked and and only one death was reported.

If the fact that a large amount of the stock bred at Hissar is issued to Government Departments at prices very far below that obtainable from private purchasers or in the open market is taken into consideration, the farm may be said to be practically self-supporting.

Lieut.-Col. Farmer has as usual worked hard and afforded ample proof of his being particularly well suited to fill the appointment of Superintendent. Any success attained is mainly due to his zeal and untiring supervision. He records his appreciation of the good work performed by his staff, more particularly Lieut. R. Morris, farm overseer, and Mr. E. MacCutchan, the farm bailiff.

There is little doubt that the work has increased to an extent that the Superintendent is much overworked. If in the interests of the farm alone, it would seem expedient that a second officer be appointed permanently to be trained under Lieut.-Colonel Farmer, who stands alone in his knowledge and experience of the Hissar Farm. Should any circumstance arise necessitating Colonel Farmer relinquishing charge of the farm, unless there is an officer thoroughly conversant with the various duties connected with this special charge ready to immediately take up the work, I fear it would not be long before neglect of this precaution was very forcibly impressed upon us.

General.

Work continues to increase and it is questionable if the Imperial staff can accomplish any more than is now

being done. It would, however, appear in several Provinces that Superintendents have a large amount of office work to get through. It is to be feared the tendency is, to look upon such and administrative duties as matters of the first importance. Experience teaches that the amount of office work instead of diminishing year by year increases enormously, and Superintendents are being prevented (or can at least make it an excuse) from devoting themselves to the essential part of their duties, viz., field work. Unless measures be taken to curtail the office work there is every prospect, and that in the near future, of Superintendents blossoming into Deputy Directors for veterinary work. The aim and object of their appointments thereby being to a great extent frustrated. Superintendents are experts and are very few in number; their energies should be concentrated on veterinary, and not be dissipated in clerical work, to do which, many other cheaper and perhaps more efficient agencies are available. In order to perform veterinary work proper in an efficient manner, it is imperative that they be free as possible to employ their time in special work and pursue it among the agricultural classes. Superintendents who do not spend the greater portion of the year going about their respective charges, helping the people during outbreaks of cattle disease, and enquiring into all matters affecting agriculture from a veterinary standpoint, but who entrust such important duties to subordinates without thorough supervision, will not, in my opinion, be in full sympathy with the welfare of cattle owners, and must fail in the special purpose for which they are appointed. Most of the routine office work can be well done by others not possessed of their special knowledge.

Fully qualified Veterinary Surgeons for district work in India, Assam and Burma number 17.

Veterinary Assistants trained in Indian Schools and Colleges, when first put to district work, naturally are far from being qualified to perform the real work required from them. Central Colleges situated as they are in large towns cannot provide the experience necessary. The most important part of their training must come after they have left the Colleges, and it is the District Superintendents alone who can afford them this special training. It certainly cannot be done by writing from headquarters. It is rarely in Colleges that opportunity occurs of affording pupils practical instruction in that all-important work dealing with epidemics, and the same remark applies equally to the local hospitals. It can only be imparted in the villages, grazing grounds, etc., while epidemics are prevailing and as soon as possible after the outbreak has occurred. To carry out such work a Superintendent must be willing and free to leave his head-quarters at any time, and himself supervise and help in as many outbreaks as possible. When there are no epidemics Superintendents can find plenty to do in looking after the work of Assistants and instructing them how to deal with outbreaks at the onset, before their superiors can arrive, and when they must necessarily act on their own initiative."

The report is signed by G. H. Evans, Lt.-Col., Offg. Insp. Genl. C.V.D., Simla, Sept. 30, 1911.

OBITUARY.

GEORGE BARRAS, M.R.C.V.S., Aiskew, Bedale (late of Princes Risborough) Graduated, Edin: May, 1899.

Mr. Barras died on Nov. 12th, from phthisis pneumonalis. Aged 35 years.

CHARLES COLEBROOK, M.R.C.V.S., Basingstoke, Hants. Lond: May, 1861.

Death occurred on Nov. 13th, from carcinoma of stomach, at the age of 77 years.

PARLIAMENTARY.

FOOT-AND-MOUTH DISEASE. APPOINTMENT OF COMMITTEE.

In the House of Commons, on Wednesday, Nov. 15.

In answer to questions by Mr. C. BATHURST.

Mr. RUNCIMAN (Dewsbury): The Committee will consist of 12 members, who have been requested to inquire into the circumstances of the recent outbreaks of foot-and-mouth disease, and to consider whether any further measures can be adopted to prevent their recurrence. The Right Hon. Sir Ailwyn Fellowes has consented to act as Chairman of the Committee. The following are the other members who have consented to serve:—The hon. member for South Wilts, Mr. Richardson Carr, of Tring, Hertfordshire, Major E. Marten Dunne, of Gatley Park, Kingsland, Herefordshire, the hon. member for the St. Patrick's Division of Dublin, the hon. member for Barkston Ash, the hon. member for Carmarthenshire West, Mr. E. E. Morrison, of Bonnytown, Stravithie, Fifeshire, Mr. E. P. Nunneley, of Wellingborough, the hon. member of the Newmarket Division of Cambridgeshire, and the hon. member for North Bucks. I am endeavouring also to secure the assistance of a member of the Central Chamber of Agriculture. The Veterinary and Administrative officers of the Board will give the Committee every assistance. I desire, however, to arrange for the prosecution at the same time of an expert scientific inquiry into the more obscure characteristics of the disease, an inquiry which this Committee cannot be expected themselves to undertake. I am informed that the Indian Empire, where the disease is more prevalent than is, happily, the case in this country, affords a wide field for an investigation of this specialised character. I am in communication with the India Office on the subject, and I hope that it may be found possible to arrange with the Indian Government for the constitution of a small Scientific Commission consisting of two experts from this country, with whom may be associated, if the Indian Government approve, an equal number of experts appointed by them, to visit India and to study in that country the characteristics of the disease, its etiology, the means by which it is contracted and spread, and practicable means of prevention. I am aware of the difficulties which may beset the further inquiry which I propose to set on foot; but I believe that the great interests of this country in valuable live stock, and of India also, justify a more thorough scientific investigation than has been made up to the present. I am convinced that by these means we shall most effectively mitigate the loss and inconvenience suffered not only by agriculturists, but also by those whose business transactions are hampered by the restrictions which these outbreaks make it necessary to impose upon the free movement of agricultural produce.

Personal.

Mr. J. H. CARTER, F.R.C.V.S., was unanimously appointed Chairman of the Highways and Sewage Committee, at the meeting of Corporation Committees, Town Hall, Burnley, on Monday last.

The naval medical service of France still uses leeches, and in connection with this fact M. Boyer tells an amusing story. A jar of leeches was bought in 1907. Each leech when taken out has, it appears, to be signed for by the doctor. It came to pass that five leeches died a natural death without the medical certificate. It took two years of enquiry, a vast amount of correspondence, references to commissions, and reports to Ministers, to get the matter finally settled, and the death of the five leeches officially authenticated.